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Assessment of psychological impact of covid-19 pandemic on dental professionals of West-Central Maharashtra State, India

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ABSTRACT

Background: Currently whole world is under the constant threat of COVID-19 pandemic. Dentists are at the high risk as they are directly exposed to aerosol produced and salivary droplets. Isolation and its financial impact have created physical and psychological pressure, depression, anxiety and other mental health concerns. **Materials and methods:** An online structured cross-sectional survey was conducted during September and October 2020. 25 item surveys were developed and was randomly circulated and distributed among the 620 Dental professionals of Ahmednagar district through link using email and messages. Psychological impact of COVID-19 was assessed using GAD -7 scale (Generalised Anxiety Disorder), which measures the presence and severity of anxiety symptoms. Descriptive statistics was applied to represent participants characteristics and Chi-Square test was applied to evaluate the level of association among variables with a significance level of $p < 0.01$. **Results:** Among 600 participants from the study 37% (222) displayed mild signs of anxiety, about 40% (240) displayed moderate anxiety while 23% (138) displayed severe signs of anxiety as assessed using GAD -7 scale (Generalised Anxiety Disorder). **Conclusion:** Dental professionals all over the world felt a moral duty to reduce routine care for fear of spreading COVID-19 among their patients and beyond, but they are understandably concerned about the financial consequences. The findings of present study are useful in highlighting the psychological effect of COVID-19 pandemic on dental professionals of west-central Maharashtra state, India.

Keywords: Dentist, COVID-19, Psychological impact



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1. INTRODUCTION

Currently whole world is under the constant threat of “COVID-19” pandemic caused by Coronaviruses is a group of “RNA” virus responsible for causing diseases in birds and human. This group of viruses are responsible for respiratory tract infections which can range from mild (in human common cold), while more lethal varieties of this strain can cause SARS, MERS and COVID-19. The name corona virus was termed by “June Almedia” and “David Tyrrell” who first noticed and investigated corona virus which is derived from Latin word Corona meaning “wreath” or “Crown”. Microbiologically their structure is roughly spherical with unique surface projections with highly variable size of approximate diameter range from 50 to 200nm with average molecular weight 40,000 kDa. This virus has lipid envelope which is bilayered with membrane proteins and nucleocapsid. This bilayered envelope helps to protect the virus ultrastructure when it is outside the host cell (Hou, 2017).

A pneumonia upsurge was reported in “Wuhan,” “China” in December 2019 which on 31st December 2019 was traced to a newly discovered strain of coronavirus which was described by World Health Organisation (WHO) as nCoV-2019, later international committee on taxonomy of viruses and diseases renamed it as SARS-CoV-2 and disease was called Coronavirus disease (COVID-19). The threat of coronavirus pandemic is still hovering over the world thus it is important to shed the light on the impact of this COVID-19 outbreak on dental professionals and various areas to be taken into consideration for future outbreaks as many governments and governing bodies have declared various limitations on activities focusing on reducing transmission, at the same time it is impacting economy of people in various sectors, and dental profession being one of them because of use of high speed rotary handpieces and ultrasonic instruments leads to production of salivary droplets and aerosols that are contaminated with body fluids like blood, Gingival crevicular fluid (GCF), etc. therefore dental professionals possesses high risk to get exposed virus itself or to contaminated clinical setting. Also, COVID-19 can occur through contact between damaged oral mucosa and contaminated mucosa when the epithelial defensive barrier is removed as a result of any iatrogenic error damage to oral epithelium (Kohn, 2004).

This outbreak has affected almost all countries in the world including every section in society. Various studies from the year 2003, SARS and year 2014 Ebola virus disease outbreak have demonstrated an increased prevalence of various psychiatric & anxiety disorders, especially among healthcare workers owing to various factors. Considering this and current effect of COVID-19 pandemic worldwide we were desirous to investigate the extent and psychological effect on dental professionals across Ahmednagar district of Maharashtra state in India.

This study aims to provide an insight into assessment of psychological impact of COVID-19 pandemic on dental professionals of Ahmednagar district and some concrete actions to avoid subsequent potential consequences are recommended.

2. MATERIALS & METHODS

An online structured cross-sectional survey was conducted during September and October 2020 as per the Helsinki declaration (World Medical Association, 2013). Ethical clearance was obtained from institutional ethical committee of Pravara Institute of Medical Sciences-Deemed University, Loni (IEC PIMS-DU) (*Registration No: PIMS/DR/RDC/2020/370 Dated on 5/10/2020*). Consent was obtained from participants and participation was voluntary.

25 item survey was developed and made available on Google forms with email link for the same was obtained. Later this link was randomly circulated and distributed among 620 dental professionals of Ahmednagar district through link using email and messages. 600 participants response was reported. No personal information was obtained in the form to maintain the complete anonymity. All responses obtained from the participants were saved with access only to primary author

The data was collected from participants during September October 2020. The Google form included brief description of the study followed by formal consent statement for participating dental professionals. The language of questionnaire was English and it took approximately 5 to 10 minutes for completion and submission. Psychological impact of COVID-19 was assessed using GAD -7 scale (Generalised Anxiety Disorder) (Table 1), which measures the presence and intensity / severity of anxiety symptoms (Spitzer et al., 2006).

Table 1 Generalised Anxiety Disorder scale

From past 2 weeks, how often have you been bothered by the following mentioned problems?	Not at all sure	Several days	Over half the days	Nearly every day
1. How often are you feeling anxious/nervous/on the edge?	0	1	2	3
2. How often you were not being able to stop/ control worrying?	0	1	2	3
3. How often you are worried too much about different things around yourself?	0	1	2	3

4. How often you have trouble of being relaxed/ being at peace?	0	1	2	3
5. How often you have been so restless that you find it hard to sit still?	0	1	2	3
6. How often you get annoyed / irritated?	0	1	2	3
7. How often you think that something awful might happen?	0	1	2	3
The score from each columns needs to be added	+	+	+	
Total score:				

In relation to any problem from above mentioned list, how difficult have these made it for your routine work, to take care of things at home or get along with other people / person?

Not difficult at all,

Somewhat difficult,

Very difficult,

Extremely difficult

Scoring criteria

Score: 00-05: Mild anxiety

Score: 06-10: Moderate anxiety

Score: 11-15: Severe anxiety

Data analysis

The results were subjected to statistical analysis using SPSS 15 software and percentage wise distributions of the responses to various questions were used. Descriptive statistics was attained to represent participants characteristics comprising of mean & Standard deviation (SD) for continues variables and frequency and percentage for discrete variables. Chi-Square test was applied to estimate the level of association among variables with the significance level of $p < 0.01$.

3. RESULTS

Out of 620 participants 600 Dental professionals from Ahmednagar district responded to the survey. All the questions in Google form were compulsory so there was no incomplete response obtained. All the dental professionals included in the study were aware of ongoing Covid19 pandemic. Initial questions were related to demographic information, later questions related to GAD -7 scales (Generalised Anxiety Disorder), which measures the presence and severity of anxiety symptoms to assess psychological impact of COVID-19 were included. Among the 600 participants 67.8% were female dentist and 32.2% were male (Figure 1). Age range of participant dental professionals was 22 years to 70 years (mean \pm SD: 30.93 ± 8.71). Out of which 32.2% were BDS qualified, 55.9% were MDS qualified and 11.9% were BDS interns (Figure 1). Among the dental professionals 32.2% were Private Practioners and 54.9% were associated with Institute and working in Dental College and Hospitals, whereas 12.9% were associated with other profession like interns and marketing companies.

Those amongst dental practioners 57.6% were practising in rural area while 42.4% were practising in urban area. The work experience for dental professionals included in study was from 0 -40 years (mean \pm SD: 5.38 ± 6.59). 94.9% dental professionals were updated with the WHO, DCI and IDA guidelines prescribed for the dental practice during Covid 19 while 5.1% were still under some confusion related to guidelines issued by governing agencies. Among 600 participants from the study 37% (222) displayed mild signs of anxiety, about 40% (240) displayed moderate anxiety while 23% (138) displayed severe signs of anxiety as assessed using GAD -7 scale (Generalised Anxiety Disorder).

In this survey 92% dental professionals agreed that the dental practioners are at the higher risk of getting COVID-19 while treating dental patient as they are directly exposed to aerosols, whereas 07% were ambivalent. 88% of dental professionals think that dental practice in India may witness a tremendous change during/ after the COVID-19 pandemic, 02% do not expect any change whereas 10% dental professionals are not sure about the same. 66% dental professionals get anxious while dealing with the patients during the current period of pandemic, 19% doesn't agree to same while 15% professionals say they may get anxious while treating patient (Figure 2). 78% dental professionals are worried about the financial management during current pandemic, 12 % dental professionals are not worried while 12 % were not sure about their financial management during current pandemic situation. Of about 49% dental professional felt the need of developing alternate source of income for dental practioners after the

pandemic whereas 32 % were not sure while 19 % were of opinion that there is no need to develop alternate source of income (Figure 2).

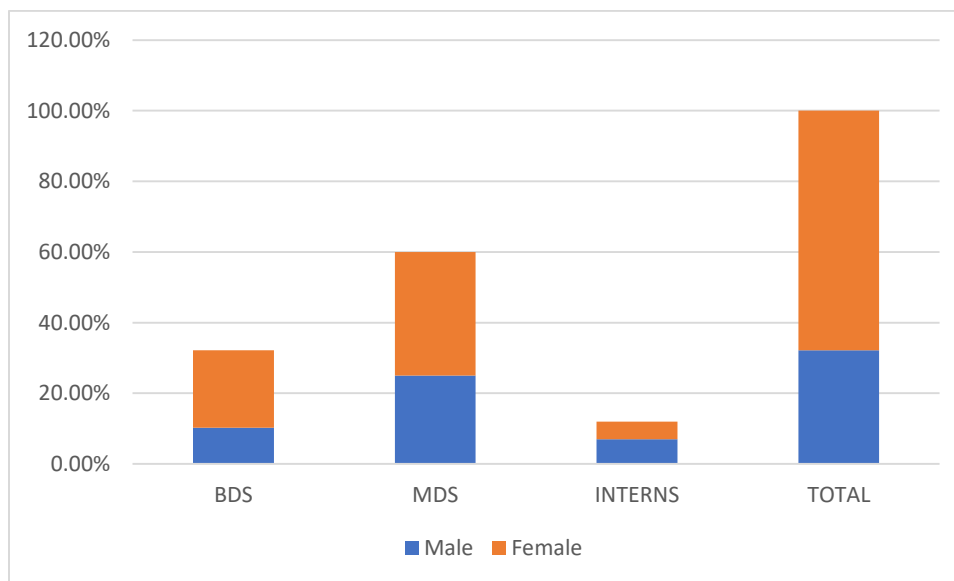


Figure 1 Bar chart showing Gender wise distribution

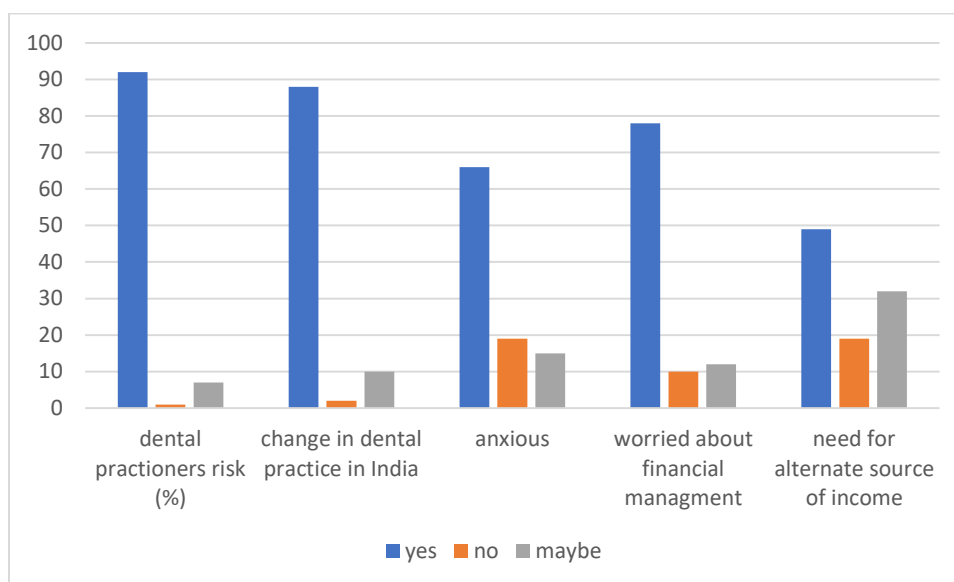


Figure 2 Bar chart showing Generalised Anxiety Disorder distribution.

On being questioned that how often they have been bothered by the current situation and future of the dental practice, 22% answered they were not sure at all, 39% were seemed to have bothered on several days, 13.6% over half the days, and 25.4% were seem to bothered nearly every day. Most of the time 22% feel nervous, restless, depressed and lack of concentration, 35.6% sometime, 25.4% a little of the time, whereas 16.90% did not felt any of the symptoms any of the time. 64.4 % dental professionals feel that the patients feel that they can contract COVID-19 during a dental service quite a lot time whereas 25.4% think there are little chances while 10.2% feels there is extreme possibility of the same. 8.5% dental professionals think that their patients are extremely worried of contacting COVID-19 during a dental treatment whereas 35.5% are little worried of contracting a COVID-19 during dental treatment being performed and 55.9% quite a lot time worried for the same. On being questioned about which emotion dental professionals feel when thinking about COVID-19, 79.7% felt concern, 10.2% felt fear, 6.8% felt anxiety whereas 1.7% felts sadness and anger.

4. DISCUSSION

Since last few months' COVID-19 pandemic has become matter of concern across the whole globe where every sector of society including healthcare sector is fighting hard against it. Dental professionals as health care workers are involved in providing services; also emergency dental treatment entails direct contact with patients. These challenges have compounded the effect of pandemic on dentist's professional, financial, personal life. Hence this study was done taken into consideration this impact to assess psychological effect of COVID-19 pandemic on dental professionals of Ahmednagar district. All the dental professionals participated in the study were aware of ongoing COVID-19 pandemic. The age range of dental professional participants in the present study was distributed between the ages of 22-70 years with work experience of 0-40 years. The gender distribution was skewed towards females with almost 67.8%. Among 600 study participants, almost 56% were post graduate (MDS) qualified, that is majority of participant's holds master's degree, followed by bachelor's degree (BDS), and few were BDS interns. The distribution across dental professionals was well spread with majority being associated with dental college and hospital, 32.2% were private practitioners while few participants were associated with other professions like interns and marketing companies. The distribution across practice and work setting was balanced between Rural and Urban area with slightly inclined towards Rural due to geographical location of Ahmednagar district.

The prevalence of generalised anxiety symptoms as assessed through GAD -7 scale among dental professionals of Ahmednagar district, Maharashtra state is of concern as high GAD-7 scores has been previously linked to the impact on services such as functional impairment including decrease in productivity at work place and increase sick days (O'Donovan et al., 2010). Also, higher anxiety levels have been shown to influence the inflammatory processes within the body which affects the immune responses (O'Donovan et al., 2010). This can be of concern as COVID-19 is likely to have worse outcomes in immunocompromised individual and dental professionals are at higher risk of contracting the disease because of increased exposure (Maunder et al., 2006). Although it was not possible to exemplify the average rise in GAD-7 scores following this pandemic due to the absence of a representative baseline score, the qualitative data collected from the survey demonstrates the direct and indirect impact this pandemic has had on dental professionals.

The responses shared by study participants surrounding their fear associated with this pandemic of COVID-19 offers cognizance into the profound psychological implication of this pandemic and strongly suggest this pandemic to be a provenance of anxiety during survey period (Nickell et al., 2004; Ruiz et al., 2011). Based on this survey, the most common concern among dental professionals was to contract COVID-19 while treating dental patients as they are directly exposed to aerosols, and dismay of carrying virus to family which in turn increases the anxiety to have permanent effect on family. Most of the dental professionals think that Dental Practice in India may witness a tremendous change during/after the COVID-19 pandemic as the dentists as well as patients are more concern about contracting the virus during treatment. Also, the measures to prevent spread of virus like sterilisations protocols, use of "*Personal Protective Equipment (PPE)*" may alter the scenario of treatment time and cost.

Hence dental professionals are also worried about the financial management and half of the study participants feels need to develop alternate source of income due to fluctuation of the situation and government restrictions from time to time due to unpredictable course of Pandemic. This overall effect adds onto increased anxiety levels among dental professionals (Hou et al., 2007).

5. CONCLUSION

During these testing times of COVID 19 pandemic, dentist all over the globe felt the moral responsibility to reduce routine dental care because of fear of spreading COVID-19 to their patients, family and others but they are understandably concerned about the financial consequences and challenges they need to face after with. The findings of present study are useful in highlighting the psychological impact of COVID-19 pandemic on dental professionals of West-Central Maharashtra. The long-term psychological impact of virus outbreak on dental professionals needs to be assessed. Also, future preventive measures to follow up the improvement and resolutions of general anxiety symptoms needs to be validated. Insistence needs to be implemented on measuring the well beingness measures and mental preparedness schemes in allaying the anxiety amongst the dental professionals which will be helpful in planning for future predicament.

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Author's contribution

Preeti Kale: Concepts, Design, Definition of intellectual content, Literature search, Clinical studies, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review, Guarantor

Anuraga Sekharamantri: Concepts, Design, Definition of intellectual content, Literature search, Clinical studies, Data acquisition, Data analysis, Statistical analysis, Manuscript review

Asawari Lawande: Concepts, Design, Data acquisition, Data analysis, Statistical analysis, Manuscript preparation, Manuscript editing, Manuscript review

Shraddha Bhandari: Concepts, Manuscript preparation, Manuscript editing, Manuscript review.

Pranay Thakur: Definition of intellectual content, Literature search, Clinical studies, Manuscript editing, Manuscript review.

Mrunal Deshmukh: Concepts, Manuscript editing, Manuscript review, Guarantor

Ameet Mani: Concepts, Design, Definition of intellectual content, Literature search, Manuscript editing, Manuscript review, Guarantor

Raju Anarthe: Concepts, Design, Definition of intellectual content, Literature search, Manuscript review, Guarantor

Gowri Pendyala: Concepts, Design, Manuscript preparation, Manuscript editing, Manuscript review, Guarantor

Rachita Mustilwar: Manuscript preparation, Manuscript editing, Manuscript review, Guarantor

Ethical approval

The study was approved by the Medical Ethics Committee of Pravara Institute of Medical Science University (IEC PIMS-DU) (Registration No: PIMS/DR/RDC/2020/370 Dated on 5/10/2020).

Conflicts of interest

The authors declare that they have no conflict of interest.

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Data and materials availability

All data associated with this study are present in the paper.

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